

Proposed Amendments to the Solid Waste Collection Vehicle Rule in the South Coast Air District

Public Workshop

**April 6, 2005 - El Monte
9:00 - 11:30 AM**



Why Reduce Diesel Emissions?

- Diesel Engines are Long Lived
- NO_x is an Ozone Precursor
- Diesel PM is a Toxic Air Contaminant

Health Impacts of Diesels in California

- Annual health impacts
 - 2,900 premature deaths
 - 3,600 hospital admissions
 - 240,000 asthma attacks/respiratory symptoms
 - 600,000 lost days of work
- By comparison
 - 3,700 deaths from car accidents
 - 2,000 homicides

What Vehicles Are We Talking About?

Solid Waste Collection Vehicles (SWCVs)



Scope & Applicability

ARB SWCV Rule

- Private Companies and Municipalities Operating SWCVs that are Collecting Solid Waste for a Fee

What Vehicles?

- 1960 - 2006 MY Diesel Engines
- Greater than 14,000 lbs. GVWR
- On-Road Residential and Commercial SWCVs
- Back-up Vehicles are Excluded

ARB's Rule In South Coast

- ARB's Existing Rule Applies to **ALL** SWCVs in California
- South Coast Collection Companies Should Now Be in Compliance with the ARB Rule
- Nat. Gas is an Approved ARB BACT Option
- Nat. Gas Complies With Both ARB and South Coast Rules

ARB Rule Compared to South Coast Rule

South Coast 1193:

- In Effect 2001
- Applies To New Vehicles
- Applies To Fleets Of 15 Or More SWCVs
- Must Purchase Natural Gas Vehicles

ARB:

- In Effect 2004
- Applies To All SWCV Fleets of Any Size
- Various BACT Options May Be Used

ARB BACT Options

- Diesel Engines:
 - Certified to MY 2007 0.01 g/bhp-hr PM standard
 - Existing 0.10 g/bhp-hr PM standard retrofitted with Diesel Emission Control Strategy (DECS)
- Apply DECS to existing engines
 - Verified to Highest Diesel PM Emission Reduction
- Alternative-Fuel Engines (CNG, LNG, etc)

BACT Implementation Schedule

TOTAL FLEET 4 or More Vehicles

Group	Engine MY	BACT Implementation						
		Deadline 12/31						
		2004	2005	2006	2007	2008	2009	2010
1	1988-2002	10%	25%	50%	100%			
2a*	1960 – 1987 (15 or more in the total fleet)		15%	40%	60%	80%	100%	
2b	1960 – 1987 (4 to 14 in the total fleet)				25%	50%	75%	100%
3	2003 – 2006						50%	100%

* Group 2a: An owner may not use Level 1 technology as best available control technology on Group 2a engines or collection vehicles.

ARB Rule Emission Benefits In South Coast

- NOx Reductions in 2010
 - 400 Tons Per Year (1.1 tpd)
- PM Reductions in 2010
 - 36 Tons Per Year (0.1 tpd)
- Assumes:
 - SC Reductions = 35% of Statewide
 - Scenario: Potential 1 (Staff Report)

SCAQMD Rule 1193

Preemption

- U.S. Supreme Court Ruled That Certain Aspects of Rule 1193 Are Preempted by Federal Authority
- ARB and US EPA Determined Rule 1193 Not Appropriate for Waiver Without State Adoption
- ARB Agreed to Evaluate Four Fleet Rules - Including Rule 1193

Proposed Amendment to the ARB SWCV Rule

- Expand Rule to Include SWCV Purchase/Lease Requirements in **South Coast:**

Best Engine Selection/Technology
“BEST”

Two Ways To Be “BEST”

1. Purchase Certified Engines That Meet Proposed BEST Criteria
2. Apply Verified Retrofit to Certified Engine to Meet Proposed BEST Criteria

Proposed BEST Criteria for Heavy-Duty Engines

- 2005-2006 Model Year Engine
 - 1.8 g/bhp-hr NO_x+NMHC
 - 0.03 g/bhp-hr PM
- 2007-2009 Model Year Engine
 - NO_x FEL \leq [0.2 - 0.9]* g/bhp-hr
 - 0.01 g/bhp-hr PM
- 2010+ Model Year Engine
 - 0.2 g/bhp-hr NO_x
 - 0.01 g/bhp-hr

*We are requesting comments on the value within this range that should be the upper allowable Family Emission Limit for NO_x.

Proposed Exemptions

- Neither Compliant Engine Nor Compliant Engine-Retrofit Combination Available
- Purchase Contracts Signed Before Adoption Date of Rule

ARB Proposal Compared to South Coast Rule 1193

- Based on BEST Criteria,
No Prescribed Fuel
- Transfer Trucks Not Included
- Applies to All Fleets in the South
Coast Air District, Not Just Those
With 15 or More Vehicles

Preliminary Estimates: NOx Emissions Benefits

NOx Std g/bhp-hr	gr/mile per truck	tons/yr per truck	tons/yr 200 trucks
2.5*	18.7	0.32	64
1.2	11.2	0.19	38
0.9	8.4	0.15	30
0.2	1.9	0.03	6

*NOx + NMHC standard

- Reductions from 200 Trucks
 - 8 tons/year (From 1.2 to 0.9 g/bhp-hr)
 - 32 tons/year (From 1.2 to 0.2 g/bhp-hr)

Potential Technology Options

- Natural Gas Fueled Vehicles
 - Expected to Meet 0.2 g/bhp-hr NO_x in 2007
- Diesel Vehicle with Selective Catalytic Reduction (SCR) Retrofit
 - 70 to 90% NO_x Reductions
- Diesel Vehicle with Lean NO_x Catalyst (LNC) Retrofit
 - 25% NO_x Reduction (approx)

Verified Diesel Retrofits

Verified Diesel Retrofits Are Posted
On The Following Website:

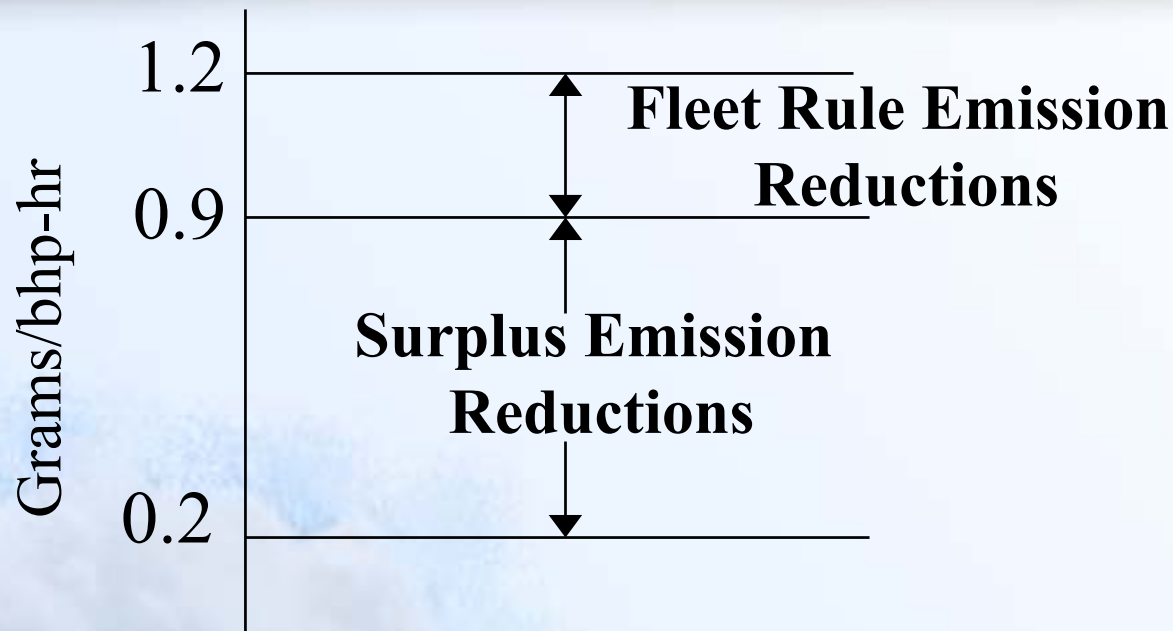
<http://www.arb.ca.gov/diesel/verdev/verdev.htm>

Preliminary Cost Estimates

Technology Option	Incremental Cap. Cost \$/truck	Incremental O&M \$/truck/yr
LNG truck (0.2 g/bhp-hr)	\$50,000	\$2300
SCR retrofit (0.2 g/bhp-hr)	\$20,000	\$120
LNC retrofit (0.9 g/bhp-hr)	\$18,000	\$390

- Relative to a 2007 MY 1.2 g/bhp-hr diesel engine
- 2600 hrs/yr operation, 2.5 gal/hr diesel fuel
- Diesel fuel: \$2/gal, LNG: \$1.15/gal, Urea: \$2/gal
- LNG to diesel use-rate: 1.8 gal LNG to 1 gal diesel
- Incremental maintenance cost for LNG = \$2,000/yr/truck

Incentive Funding Example



- **Example:** If BEST Limit Set at 0.9 g/bhp-hr and Vehicle Emits at 0.2 g/bhp-hr, Surplus Emission Reductions Would Be 0.7 g/bhp-hr.

Public Process

- Public Workshop on April 6, 2005
- Comments Requested by April 15, 2005
- Staff Report Released by June 3, 2005
- Board Hearing on July 21-22, 2005

COMMENTS REQUESTED

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